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SALMONELLA TYPHIMURIUM DT104 AND NON-DT104 IN ONTARIO, 2000

Introduction

The first *Salmonella* Typhimurium definitive type 104 (ST DT104) isolate was identified in Canada in 1970 and was sensitive to all antibiotics tested¹. ST DT104 has become of increased concern because it is now frequently resistant to multiple antibiotics. Antibiotic resistant bacterial infections may compromise treatment of a severely or systemically affected individual.

A review of ST DT104 cases confirmed at the Central Public Health Laboratory in Ontario during the period August 1, 1997 to July 31, 1998 was undertaken to better understand this organism². In 1999, four provinces, Ontario, British Columbia, Alberta, and Saskatchewan, began collaboration on a study to examine the risk factors and burden of illness associated with ST DT104 infection. This paper presents findings specific to Ontario obtained from the multi-province case-control study. More specifically the paper will provide descriptive epidemiological findings as well as microbiological findings with respect to antimicrobial resistance patterns of the ST isolates.

Methods

All isolates of ST in Ontario identified at the Central Public Health Laboratory in Toronto during the 12-month study period, December 1, 1999 to November 30, 2000 were sent to the National Laboratory for Enteric Pathogens in Winnipeg for phage typing and antimicrobial sensitivity testing using Sensititre™ (Trek Diagnostics, Westlake, Ohio). The bacterial isolates were classified by commonly used antimicrobial resistance patterns (R-types) such as ACSSuT (Ampicillin, Chloramphenicol, Streptomycin, Sulphamethoxazole, and Tetracycline).

Every second ST case identified in Ontario during the study period was eligible for inclusion in the case-control study. Data collection consisted of telephone interviews. The information collected on demographics, symptoms, and a variety of risk factors for the cases and age-matched controls was self-reported. This paper provides a subset of information, specific to Ontario, from the case data that were available in the case-control study database.

All data were entered into SPSS (ver. 10.0) and responses summarized by frequency distributions. Chi-square or independent t-tests were calculated where appropriate and p-values = 0.05 were reported as statistically significant.

Results

A total of 573 isolates of ST isolates were identified during the 12-month data collection period. Of the 573 isolates, data were available from 259 cases that were used in the multi-province case-control study. Of the 259 cases, 113 (44%) were ST DT104 and 146 (56%) were ST non-DT104.

For the 259 cases, there were more females in the ST DT104 case-group and more males in the ST non-DT104 case-group, however, there was no statistical difference between the two groups (Table 1). The rates of illness by age-band for both ST DT104 and ST non-DT104 were highest for the 0-4 year band, followed by the 5-9 year band (Figure 1). A higher rate of illness was observed for ST non-DT104 cases compared to ST DT104 cases in the 0-4 age-band. The distribution of ST DT104 cases by month was relatively even throughout the 12-month period whereas the distribution of ST non-DT104 cases was greater during the summer months (Figure 2). Diarrhea, fever, cramping, and nausea were the most frequently reported symptoms. Upon comparison of ST DT104 and ST non-DT104 cases by gender, adult versus pediatric cases, and various self-reported symptoms, "headache" was the only statistically significant difference observed (p=0.047) (Table 1).

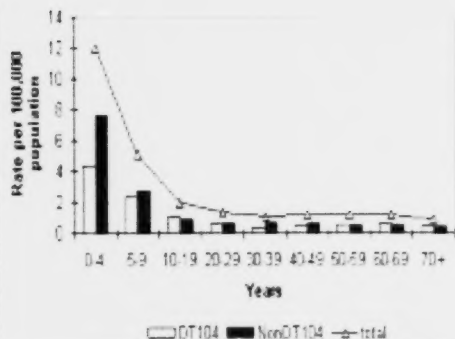
Table 1.

Salmonella Typhimurium DT104 and non-DT104, summary of frequency distributions for gender, age, adult or paediatric case, and symptomatology, Ontario, 1999/2000.

	DT104	non-DT104
Gender	F=52.2% (59/113) M=47.8% (54/113)	F=43.8% (64/146) M=56.1% (82/146)
Adult or paediatric case (under 12)	A=53.1% (60/113) P=46.9% (53/113)	A=45.2% (66/146) P=54.8% (80/146)
Days of diarrhea	9.50 days N=88	9.37 days N=131
Diarrhea	97.3% (110/113)	100% (146/146)
Fever	83.9% (94/112)	79.2% (114/144)
Vomiting	45.5% (51/112)	46.9% (67/143)
Cramps	89.0% (97/109)	94.3% (133/141)
Bloody stool	44.2% (50/104)	56.1% (74/132)
Headache*	67.7% (65/96)	54.3% (63/116)
Nausea	74.0% (77/104)	68.7% (90/131)
Aching joints	20.6% (22/107)	27.1% (36/133)
Rash	17.0% (19/112)	15.1% (22/146)
Weak	33.3% (35/105)	31.1% (41/132)
Dizzy	28.3% (28/99)	33.3% (42/126)
Dysuria	14.3% (15/105)	14.9% (20/134)
Tired	72.3% (81/112)	67.4% (97/144)

*Statistically significant by Chi-square analysis

Figure 1. Age-band specific distribution of total cases of *Salmonella* Typhimurium, DT104 (N = 113), and non-DT104 (N = 146) in Ontario, 2000.



The 573 ST isolates identified by phage type and R-type ACSSuT are shown in Table 2. The most frequent phage type was ST DT104 representing 47.3 % (271/573) of isolates. Of the 271 ST DT104 isolates, 249 (91.9%) were R-type ACSSuT.

There was a statistically significant difference ($p=0.001$) between ST DT104 and ST non-DT104 sensitivity patterns for seven individual antibiotics (Table 3). The resistance to these antibiotics was also reflected in the R-types ACSSuT, ACKSSuT (ampicillin, chloramphenicol, kanamycin, streptomycin, sulfonamides, tetracyclines), and ACAmocT (ampicillin, chloramphenicol, amoxicillin, tetracyclines) as 91.9, 26.6, and 10.3% of isolates exhibited these patterns.

Figure 2. *Salmonella typhimurium* DT104 (N = 113) and non-DT104 (N = 146), by monthly distribution, Ontario, 1999/2000.

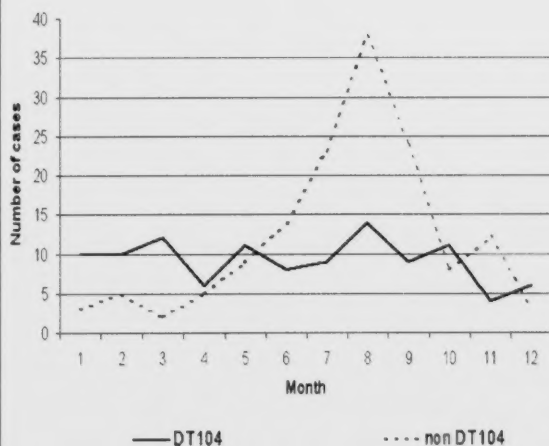


Table 2.

Salmonella Typhimurium, by phage type and R-type ACSSuT, Ontario, 1999/2000.

	Phage type	No. of isolates	Percentage of isolates	No. of R-type ACSSuT	Percentage of isolates
1	104	271	47.3	249	91.9
2	124	39	6.8	0	0
3	124 variant	30	5.2	1	3.0
4	108	29	5.1	3	10.3
5	10	15	2.6	0	0
6	U302	14	2.4	9	64.3
7	107	13	2.3	0	0
8	UT5	13	2.3	0	0
9	208	9	1.6	0	0
10	193	8	1.4	0	0
	Other	132	23.0	7	5.3
	Total	573	100.0	299	47.0

* Resistance type

Discussion

The number of ST and ST DT104 identified in Ontario decreased slightly between 1997-98 and 2000. In 1997-98, of the 760 ST identified, 299 (39%) were ST DT104². In 2000, of the 573 ST identified, 271 (47%) were ST DT104.

Consistent with other studies^{2,3} rates were highest in the age group 0-4 years followed by 5-9 years (Fig. 1). ST DT104 cases were relatively evenly distributed throughout the 12-month period. The typical seasonal distribution common to enteric diseases in Ontario, with cases occurring more frequently in the summer months and less frequently in the winter months, was not observed with ST DT104. In contrast, the typical enteric seasonal distribution was observed in 1997-98, however². The typical seasonal distribution for ST non-DT104 cases was observed with a peak in the number of cases during July, August and September (Fig. 2).

Diarrhea, fever, cramping, and nausea were the most frequently reported symptoms (Table 1) consistent with previously documented outbreaks of ST DT104⁴⁻⁷. The frequency distribution of symptoms was similar between ST DT104 and ST non-DT104 cases, except for headaches, which were more frequently reported for ST DT104. It is not known if this statistical association was artifactual. There was no statistically significant difference in the duration of diarrhea between ST DT104 and ST non-DT104 cases, 9.50 days versus 9.37 days. These data do not support a difference in symptom severity between ST DT104 and ST non-DT104 cases.

The first ST DT104 isolate was identified in Canada in

Table 3.

Salmonella Typhimurium DT104 and non-DT104
resistance/sensitivity
patterns, Ontario, 1999/2000.

Antibiotic	<i>Salmonella</i> Typhimurium DT104 (%) N=271			<i>Salmonella</i> Typhimurium non-DT104 (%) N=302		
	S**	I	R	S	I	R
Amikacin	99.6		0.4	100		
Ampicillin*	5.2		94.8	84.8	0.3	14.9
Apramycin	97.4	0.7	1.9	100		
Amoxicillin/Clavulanic acid*	55.4	33.9	10.7	91.4	4.6	4.0
Ceftriaxone	98.5	1.5		96.7	3.0	0.3
Cephalothin	90.0	7.4	2.6	90.4	2.6	7.0
Chloramphenicol*	5.5	1.5	93.0	83.1	8.9	7.9
Ciprofloxacin	100			100		
Trimethoprim/Sulfamethoxazole	99.6		0.4	97.7		2.3
Florfenicol			100			100
Gentamicin	98.5		1.5	99.3		0.7
Kanamycin*	72.4	0.7	26.9	93.4		6.6
Nalidixic acid	100			99.7		0.3
Sulfamethoxazole*	4.1		95.9	70.9		29.1
Streptomycin*	6.3		93.7	84.1		15.9
Tetracycline*	6.3		93.7	84.1	0.3	15.6
Ceftiofur	98.5		1.5	96.7		3.3
ACSSuT*			91.9			6.6
ACKSSuT*			26.6			1.0
ACAmocT*			10.3			2.6

*Statistically significant differences ($p=0.001$) between DT104 and non-DT104

**S = sensitive

I = intermediate (partially sensitive)

R = resistant

1970 and was sensitive to all antibiotics tested¹. During this study period, 91.9% of ST DT104 isolates in Ontario were R-type ACSSuT (Table 3). This was higher than observed for British Columbia where the ACSSuT pattern comprised 19% (12/64) of ST DT104 isolates in 1997/1998³. Additionally, 10.0% of ST DT104 isolates in Ontario were R-type ACAmocT. This was lower than observed in Alberta where this pattern comprised 56% of isolates in 1999⁸. The difference in antibiotic resistance patterns between provinces is not well understood.

Recommended therapeutic agents for severe or extraintestinal illness include ciprofloxacin, azithromycin, ceftriaxone and cefotaxime⁹. All ST DT104 isolates in Ontario were sensitive to ciprofloxacin unlike in the United Kingdom where approximately 15% of ST DT104 isolates have shown decreased susceptibility to ciprofloxacin¹⁰.

Conclusion

The Ontario data presented in this article were a component of a study involving four provinces in Canada. The study was conceived to better understand one emerging antimicrobial resistant organism, ST DT 104, in Canada. A review of Ontario data revealed that the number of ST decreased from 760 in 1997/98 to 573 in 2000. Similarly, the number of ST DT104 decreased from 299 to 271.

Antimicrobial resistant organisms have emerged as a significant public health issue in recent years. Antimicrobial resistant organisms certainly compromise therapeutic options for individuals where antimicrobial treatment is required. There is some belief that antimicrobial resistant organisms are more pathogenic than antimicrobial sensitive organisms. The analysis performed in this study compared self-reported symptoms of ST DT104 and ST non-DT104 cases. ST DT104 might be considered representative of an antimicrobial resistant organism and ST non-DT104 representative of an antimicrobial sensitive organism, however, there is some misclassification of categories. The Ontario data did not support a difference in pathogenicity between ST DT 104 and ST non-DT104.

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REFERENCES

1. Khakhria R, Mulvey M, Ahmed R, *et al.* Emergence of multi-drug resistant *Salmonella typhimurium* phage type 104 (DT104) in Canada. 19th International Conference on Emerging Infectious Diseases, 8-11 March 1998, Atlanta, Georgia. ICEID Poster P22-19.
2. Middleton D, Ciebin B, Michel P, Ford M. *Salmonella typhimurium* definitive type 104 in Ontario, 1997-1998: One example of an antimicrobial resistant organism. Pub Hlth Epidemiol Rep Ont 1999; 10:230-235.
3. Buxton J, Fyfe M, King A, Deeks S, Dore K, Ahmed R, Khakhria R, Paccagnella A, Hockin J. *Salmonella typhimurium* definitive type 104 isolates in British Columbia, 1997-1998. Can Comm Dis Rep 1999; 25:129-33.
4. Cody SH, Abbott SL, Marfin AA, Schulz B, Wagner P, Robbins K, Mohle-Boetani JC, Vugia DJ. Two outbreaks of multidrug-resistant *Salmonella* serotype *typhimurium* DT104 infections linked to raw-milk cheese in Northern California. JAMA 1999; 281:1805-1810.
5. Villar RG, Macek MD, Simons S, Hayes PS, Goldoft MJ, Lewis JH, Rowan LL, Hursh D, Patnode M, Mead PS. Investigation of multidrug-resistant *Salmonella* serotype *typhimurium* DT104 infections linked to raw-milk cheese in Washington State. JAMA 1999; 281:1811-6.
6. O'Flanagan D, Bauer D, McCarthy T, Grein T. An outbreak of multidrug-resistant *Salmonella typhimurium* food poisoning at a wedding reception. Ir Med J 1999; 92:238-41.
7. Gosek G, Leschinsky D, Irons S, Safranek TJ. Multidrug-resistant *Salmonella* serotype Typhimurium - United States, 1996. MMWR 1997; 46:308-310.
8. Beaudin BA, Brosnikoff CA, Grimsrud KM, Heffner TM, Rennie RP, Talbot JA.
Susceptibility of human isolates of *Salmonella typhimurium* DT 104 to antimicrobial agents used in human and veterinary medicine. Diagn Microbiol Infect Dis 2002; 42:17-20.
9. Bartlett JG. Pocket book of infectious disease therapy. Philadelphia (PA): Lippincott, Williams and Wilkins; 2000.
10. Threlfall EJ. Antimicrobial drug resistance in *Salmonella*: problems and perspectives in food-and water-borne infections. FEMS Microbiol Rev 2002; 26:141-8.



Communiqué

Public Health Research, Education and Development Program

A BRIEF ANALYSIS OF THE FAMILY CENTERED MATERNITY CARE SURVEY 2000 IN THE CITY OF OTTAWA

Introduction

The National Guidelines on Family Centered Maternity Care in Canada¹ considers pregnancy and birth normal, healthy life events. Family Centered Maternity Care is a complex, multidimensional, dynamic process of providing safe, skilled and individualized care responding to the physical, emotional, and psychosocial needs of the woman and her family. As well, such care recognizes the significance of family support, participation, and choice (Rush J. 1997)². The Family Centered Maternity Care Survey was undertaken in Ottawa in 2000-2001 with the goal of gaining a better understanding of the care received by women in the City of Ottawa during the four phases of reproductive health; prenatal care, labour and birth, in-hospital postpartum and at-home postpartum care. The 599 mothers who responded to the survey revealed a high-level of satisfaction with the services, support and information received both before and after birth but also identified some areas of concern for health planners, health care professionals and health care programmers. This paper offers a description of the methods for this survey and a brief presentation of results. Specific indicators such as one and six week breastfeeding rates and mother-infant togetherness will be explored.

Method

The Family Centered Maternity Care Survey was a cross-sectional telephone survey in which each mother was interviewed on two separate occasions using two different questionnaires. Although some of these women have older children, the survey addressed only their most recent birth experience.

The specific objectives of this study were:

- a) To gain a better understanding of the care received by women in the City of Ottawa during their pregnancy and in the postpartum period within both hospital and community settings.
- b) To determine women's perinatal behaviours.
- c) To collect socio-demographic data on women who give birth in the City of Ottawa.

d) To determine the prevalence of postpartum depression. Recruitment commenced on October 1st 2000, and was completed in March, 2001. This project was approved by the Research Ethics Board of the Regional Municipality of Ottawa-Carleton Public Health Department. New mothers were eligible if they spoke French or English, were discharged from the hospital with their baby and were a permanent resident of the City of Ottawa. Data collection tools included two questionnaires developed for two structured telephone interviews which were administered to women whose infant was at least one week old at the time of the first interview and at least six weeks old at the time of the second interview. Mothers were excluded if they: a) had a stillbirth or whose infant had died, b) had an infant with severe life threatening congenital anomalies, c) did not speak English nor French, d) did not have a telephone; did not permanently reside within the City of Ottawa, e) had given their infant up for adoption or had their infant apprehended by the Children's Aid Society.

The first questionnaire for mothers was to gather information about the in-hospital experience for mother, baby and family in the first week postpartum. The second questionnaire was to gain information about broad community support for mother, baby, and family in the prenatal and six-week postpartum periods. A third questionnaire was developed for the purpose of collecting hospital-based data on services

and support available for the new family for the time the mother was in hospital. This was completed by a hospital manager at each of the four Ottawa hospitals with a mother-infant unit. The results from the third questionnaire are not available at this time.

The data were entered on a personal computer and analysed using the software package SPSSPC version 9.0. Descriptive statistics were used to describe the response rates and characteristics of each group.

Findings

Sample Description

The final sample of respondents who answered both one week and six week questionnaires was 599 new mothers. The majority of women who participated in the survey had a partner (90%), were thirty years old or over at the time of the birth of their child (58%), were well educated (65% had completed post secondary education) and had high incomes (69% with a family income of fifty thousand dollars or more).

Public Health Resources

Figure 1 demonstrates that although respondents reported knowledge of community resources upon discharge, many women were unaware of such resources during their pregnancy.

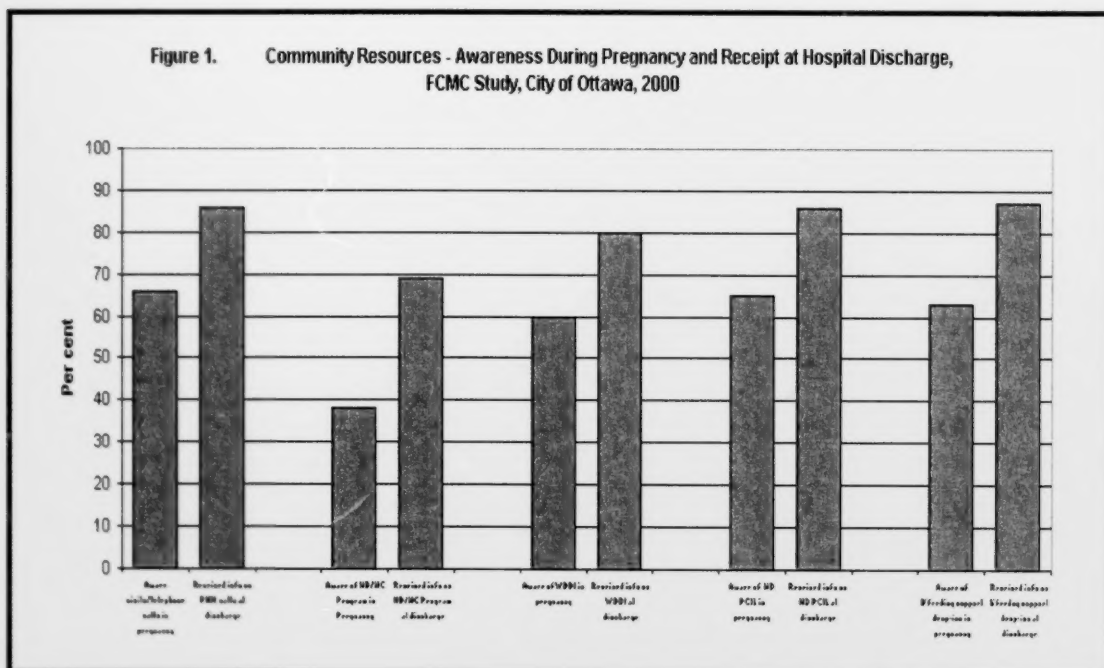


Table 1 shows the services received or used by the mother during the postpartum period. While a majority of women received a phone call from a public health nurse (PHN), 67% consented to receive a home visit. Less than 20% of mothers visited a Well Baby Drop-in and only 14% went to a Breastfeeding Support Drop-in. Respondents generally rated the services offered by the Regional Municipality of Ottawa-Carleton Public Health Department favourably, but some mothers indicated the need for improvement as indicated by the following statement from a new mother:

“Mothers should be aware of public health services before baby is born. Postpartum depression should be explained to moms before birth, taught to recognize signs and symptoms.”

Table 1. Services Received		
	#	%
Consented and received phone call from a public health nurse	574	96
Consented and received visit from a public health nurse	400	67
Consented and received services from the Healthy Babies Healthy Children Program	30	5
Visit to a Well Baby Drop-in	113	19
Phone call to the Parent Child Information Line	193	32
Visit to a Breastfeeding Support Drop-in	86	14
Consented and received package of information in the mail from the Health Department	377	63

Prenatal Education and Care

Prenatal education classes are largely attended by first time mothers and their partners. Of the 232 women who attended prenatal classes 215 (92%) were primiparous. Of those women who attended classes, 97% went with their partner, friend/relative or another person and most of the accompanying persons (98%) felt included in the prenatal classes.

Most respondents (86%) indicated that they first went for prenatal care within the first trimester of their pregnancy. Table 2 compares some of the characteristics of those women who went for prenatal care early (509 women within the first 3 months of the pregnancy) with those who went later (83 women beyond 3 months in their pregnancy). Women in the later care group appeared to have lower education, lower family income, and were somewhat younger. When differences between the two groups were

assessed using Chi-square analysis, income emerged as the only significant category ($\chi^2=4.29$, $p=0.038$). It is interesting to note that the breastfeeding rate at 48 hours postpartum for the later care group is higher (69.5%) than the earlier care group (60.1%).

Table 2. Characteristics of Respondents Who First Went for Prenatal Care Before and After 3 Months

Characteristic	3 Months or Less n=509		After 3 Months n=83	
	#	%	#	%
Choice of prenatal care provider				
Family Doctor	145	28.5	18	21.7
Midwife	10	2.0	0	0
Obstetrician	354	69.5	65	78.3
Total	509	100	83	100
Method of Feeding Baby at 48 hours				
Breast Feeding	306	60.1	57	69.5
Bottle Feeding	65	12.8	7	8.5
Both Breast and Bottle Feeding	138	27.1	18	22.0
Total	509	100	82*	100
Mother's Education				
High School	112	22	29	34.9
Some college/university	60	11.8	6	7.2
Completed college/university	272	53.4	41	49.4
Post Graduate Degree	65	12.8	7	8.4
Total	509	100	83	100
Income*				
\$50,000 plus	280	71.1	29	56.9
Less than \$50,000	114	28.9	22	43.1
Sub-total	394	100	51	100
Refused to answer	111	22	27	34.6
*($\chi^2=4.29$, $p=0.038$)				
Marital Status				
Married/ Common Law	467	91.9	71	85.5
Single/Separated	39	7.7	12	14.5
Other	2	0.4	0	0
Total	508*	100	83	100
Age of Mother				
19 and under	13	2.5	6	7.2
20-24	47	9.2	6	7.2
25-29	145	28.5	30	36.1
30-34	176	34.6	25	30.1
35 plus	128	25.1	16	19.3
Total	509	100	83	100

*No data from 1 respondent

The majority of mothers were accompanied by someone to these prenatal care visits. Almost all (98%) of accompanying persons were made to feel included in the visit, similar to the rates of prenatal education classes. Interestingly, only two-thirds of women reported that their doctor/midwife discussed preterm labour with them, and only 76% of respondents reported a good understanding of the signs and symptoms of preterm labour.

In Table 3, respondents rated their understanding and education in several areas important to mothers and families.

Table 3. Prenatal Education		
	#	%
Always/almost always felt had opportunity to ask questions of Doctor/Midwife	528	88.7
Understood well what to expect from labour and birth	534	90
Doctor/midwife discussed preterm labour	380	64.4
Prenatal educator discussed preterm labour	197*	85*
Reported a good understanding of the signs/symptoms of preterm labour	451	76
Have arranged for support for taking care of baby in the early weeks	447	74

* Denominator is number of women who attended prenatal education classes n=232

Combined Mother/Baby Postpartum Care

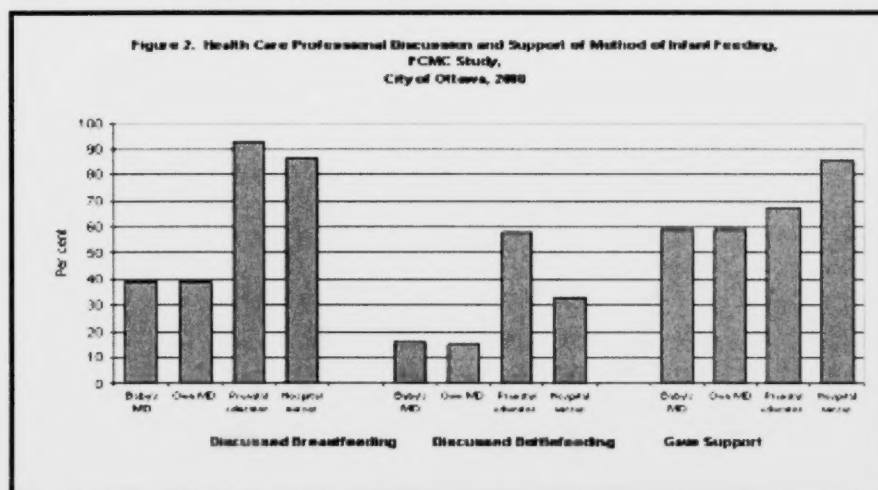
Although mother-infant contact is most beneficial immediately after the baby's birth, in this sample 40% of mothers did not hold their baby immediately after delivery and about the same number were separated from their baby for the first few hours. Furthermore, 96.5% of respondents indicated that they were separated from their baby at some point during their hospital stay. Thirty-four per cent reported having 24-hour rooming in and 45% had rooming in during the day. Only 114 (18%) respondents reported that their new baby did not spend any time at all in the nursery. In spite of this 590 (94%) women responded that they felt they had the opportunity to spend enough time with their baby while in hospital. In addition 472 (77%) rated the amount of time in hospital to learn to care for their baby as more than adequate.

The National Guidelines suggest mother and baby be in the same room 24 hours a day. "Mother/baby infant care provides infant care at the mother's bedside, guides and teaches parenting skills, attends to the mother's physiological

and psychological needs, and integrates other family members into this care"¹. This strategy necessitates baby and mother in the same room 24 hours a day. This conflict between the guidelines and the views of mothers may be due to a lack of understanding on the part of the mother of the importance of postpartum mother/baby togetherness.

Infant Feeding

"Women and families make decisions based on many factors – the expertise of professionals being one."¹ The method of infant feeding a woman chooses should be the best for mother, baby and the family. Health care professionals should inform and educate women and their families about breastfeeding and bottlefeeding and be prepared to support the choice that is made. Figure 2 indicates women received most of the information about infant feeding from their prenatal class instructor and less from their health care provider. Breastfeeding was discussed more than bottlefeeding and support for the choice of infant feeding was adequate but highest from hospital nurses.



Feeding Status

Breastfeeding initiation rates were high (88.6%) for this study sample but at 6 weeks over 100 mothers had switched to bottle feeding and the rates of bottle feeding went up from 11.4% at 48 hours (time of first interview) to 28.5% at 6 weeks (time of second interview).

Eighty per cent of mothers reported breastfeeding because they felt it was better for their baby while 19.5% of mothers breastfeed because it is better for themselves. Seventeen per cent say it is more convenient. Table 4 demonstrates the method of infant feeding at two-time periods measured in the survey.

Table 4. Breastfeeding Status at Time of Interview				
Method of feeding	At 48 Hours		At 6 Weeks	
	#	%	#	%
Breastfeeding (includes supplementation)	530	88.6	426	71.5
Bottle feeding	68	11.4	170	28.5
Total	598	100	596	100

The most important reason indicated for breastfeeding cessation was that mothers thought their babies were not getting enough milk 39 (38%). Of the mothers who breastfed at all, 94 (19%) attended one of the Breastfeeding Support Drop-ins with 45(48%) of these mothers indicating a problem breastfeeding as the reason they attended. Sixty-nine (82%) mothers found the drop-in very useful.

Table 5. Reasons Breastfeeding was Stopped Status at Time of 2 nd Interview		
Reason Stopped	#	%
Thought baby was not getting enough milk	39	38
Cracked/sore nipples	18	17
Had to return to work/school	2	2
Not comfortable/not enjoying breastfeeding	9	9
Mother was too tired	21	20

* Denominator is mothers who started breastfeeding at 48 hours who stopped at 6 weeks

Most respondents (78%) agreed or strongly agreed with the statement that the expectations they had about breastfeeding were the same as what they actually experienced and 469 (94%) of mothers who initiated breastfeeding would breastfeed their next baby.

Many mothers who breastfed their babies at all, experienced problems at home with breastfeeding 194 (36%). Of the problems identified, 52 (10%) were worried they didn't have enough milk and 77(14%) had sore nipples. Other problems mentioned were latching difficulties, worries about baby's weight, breast engorgement, and other issues related to the mother's or baby's health. Of the mothers who sought help about their breastfeeding problems (168) most of them 85 (51%) received help from a Public Health Nurse 45 (27%), received help from a lactation consultant, and 34 (20%) received help from their doctor or midwife.

Early days at home with the new baby

Mothers were very confident in their ability to care for their newborn and themselves at home and most (92%) had enough help mainly from family and friends. Upon returning home from the hospital the majority of women 566 (96%) had someone to help them. The person most often mentioned as this help was the husband/partner.

Table 6. Help at Home		
	#	%
Mother felt she received enough or more than enough help from family or friends	454	77
Mother felt she received enough or more than enough help from health care professionals since the birth of baby	405	68
Overall mother felt she had enough help since the birth of baby	543	92
Mother felt confident caring for herself during her time at home	499	83
Mother felt confident caring for baby during her time at home	550	92

Had extra assistance been available, respondents ranked "help with baby care" as most important 213 (38%), "help with keeping the house clean and laundry" as next most important 130 (23%), next important was "help with other children" 106 (18%), then "help with meal preparation 65 (11%), and finally "help with grocery shopping" 50 (8%).

Postpartum Depression

When asked about their emotional health, the majority of respondents indicated that they were able to cope very well. Ninety-five per cent of women indicated positive attitudes as evidenced by their low score on the Edinburgh Postpartum Depression Scale³. Almost all mothers [565 (95%)] who answered all the questions in the Scale scored 11 points or less indicating a healthy mental state. There

were 27 (5%) respondents who scored 12 points and over signifying some measure of difficulty coping with their new situation.

Conclusion

Overall the mothers in this sample appeared to be satisfied with their experience in all stages of the reproductive experience from prenatal care and education before the birth to six weeks postpartum. New mothers reported good support during labour and delivery from hospital nursing staff, partners, family and friends. Eighty per cent of respondents reported receiving health information and resources at hospital discharge. Eighty-six per cent of mothers felt confident about caring for their babies and ninety-two per cent reported having had enough help mainly from family and friends. For most women in this study, the method of feeding their baby was chosen prior to pregnancy and was not subsequently influenced by health care professionals. Respondents tended not to make arrangements or explore breastfeeding support prior to the birth, and hospital rooming in, which supports breastfeeding, was limited. The combination of these circumstances may have impacted on the falling breastfeeding rate as 71% were breastfeeding at 6 weeks, down from 89% at initiation. One of the most common reason given for stopping breastfeeding was that women were unsure if their baby was getting enough milk. This may be due to lack of recognition of cues from the baby indicating whether he/she was hungry or just fussy and women were not taught to recognize these cues. There could be an improvement in the following areas:

- Women's confidence levels in their breastfeeding capabilities could be higher as 44% of women indicate average or lower levels of confidence.
- In this study, 67% of mothers consented to receive a home visit. Perinatal attitudes and behaviors need to be explored to understand what feeding or parenting issues may have been missed in the 33% of mothers who did not consent to receive a home visit.
- Attendance at breastfeeding drop-ins could be increased and promoted.

A number of areas of concern emerged, of which, two were briefly outlined in this article. The first area of concern was the quick drop-in breastfeeding from 89% on initiation to 71% by the end of six weeks. Secondly was the reported separation of mother and baby while in hospital. Ninety-six per cent of women reported being separated from their baby while in hospital. Education on the benefits of rooming

in has been overlooked. Although gaps have emerged, we have gained insight into better understanding care received by women residing in the City of Ottawa during all stages of their reproductive experience.

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REFERENCES

- Health Canada. Family-Centered Maternity and Newborn Care: National Guidelines, Minister of Public Works and Government Services, Ottawa, 2000.
- Rush J. Family-centered Maternity Care Scoring Tool Project: Phase II: Obtaining Parent Input. Toronto: Ontario Ministry of Health, Institutional Services Branch, Maternal and Newborn Initiatives 1997.
- Cox, J.L. (1994) Origins and development of the 10-item Edinburgh Postnatal Depression Scale. In J. L. Cox & J. M. Holden (Eds.), Perinatal psychiatry: Use and misuse of the Edinburgh Postnatal Depression Scale. London: Gaskell.



Summary of Reportable Diseases in Ontario - December, 2002

Health Units by Region	Population 2000	AIDS	Campylo.	Chickens-pox	Chlamydia	Enceph./ Meningitis	GAS	Gonorrhea
Algoma	125,109			47	20		1	2
North Bay	93,505		2	8	9	1		
Northwestern	91,920			6	13			
Porcupine	93,680		1	97	11			
Sudbury	199,619			1	26		2	1
Thunder Bay	158,698		2		21		1	3
Timiskaming	37,721							
Total - Northern	600,252		5	159	100	1	4	6
Eastern Ontario	194,945		4	1	6	2		
Hastings & Prince Edward	159,088		2		17			
Kingston, Frontenac & Lennox	180,225			11	29		2	
Leeds, Grenville & Lanark	163,143		2					
Ottawa	779,274		7	81	95	1	1	10
Renfrew	101,131				2			
Total - Eastern	1,577,806		15	93	149	3	3	10
Durham	512,271		7		45			7
Haliburton-Kawartha	168,120		5		5			
Muskoka-Parry Sound	86,218						1	
Peel	1,008,163		19		78	4	1	15
Peterborough	128,881				1			
Simcoe	377,405		3	30	23	2	1	1
Toronto - total	2,542,844	6	61	106	409	5	16	117
North	627,021		9	26	73	1	5	14
South	688,584	5	24	28	156	1	4	61
West	509,302		17	25	100	2	4	20
East	717,937	1	11	27	80	1	3	22
York	724,969		11		16	3	1	1
Total - Central East	5,548,871	6	105	136	577	14	20	141
Grey Bruce	157,664		1	5	10			
Elgin-St. Thomas	84,182			20	2			1
Huron	61,097			2	1			1
Chatham-Kent	112,897		1	21	13	1		
Lambton	131,643				1			
Middlesex-London	412,976				21	3	1	7
Oxford	102,561					1		
Perth	75,238		1	6	3			
Windsor-Essex	381,672		5	51	20	3	1	1
Total - Southwest	1,519,330		8	105	71	8	2	10
Brant	126,481			27	11		1	
Haldimand-Norfolk	109,536		1	5	1			
Halton	375,705		1				1	
Hamilton	498,553							
Niagara	423,600		7	34	19		3	3
Waterloo	446,833							
Wellington-Dufferin-Guelph	241,777		2		16	2		1
Total - Central West	2,222,483		11	66	47	2	4	4
December 2002	11,669,344	6	145	559	944	28	34	171
* Total YTD 2002		85	4,396	13,914	17,307	695	375	1,942
* Total YTD 2001		138	4,913	11,919	16,203	533	325	2,937

The Toronto City regions above are now defined as: North - former North York, South - former City of Toronto, West - former Etobicoke and City of York, East - former Scarborough and East York

* Adjusted for deletions and late reports.

Summary of Reportable Diseases in Ontario - December, 2002

Health Units by Region	Population 2000	AIDS	Campylo.	Chicken- pox	Chlamydia	Enceph/ Meningitis	GAS	Gonorrhea
Algoma	125,109			47	20		1	2
North Bay	93,503		2	3	9	1		
Northwestern	91,920			6	13			
Percupine	93,630		1	97	11			
Sudbury	199,619			1	26		2	1
Thunder Bay	158,692		2		21		1	3
Timiskaming	37,721							
Total - Northern	800,252		5	159	100	1	4	6
Eastern Ontario	194,945		4	1	6	2		
Hastings & Prince Edward	129,063		2		17			
Kingston, Frontenac & Lennox	150,225			11	29		2	
Leeds, Grenville & Lanark	163,143		2					
Ottawa	279,274		7	81	95	1	1	10
Pendleton	101,131				2			
Total - Eastern	1,577,806		15	93	149	3	3	10
Durham	512,271		7		45			7
Haldimand-Norfolk	162,120		5		5			
Muskegon-Perry Sound	36,218						1	
Peel	1,005,163		19		78	4	1	15
Peterborough	125,331				1			
Simcoe	377,405		3	30	23	2	1	1
Toronto - total	2,542,344	6	61	106	409	5	16	117
North	527,021		9	28	73	1	5	14
South	888,534	5	24	28	158	1	4	61
West	569,302		17	25	100	2	4	20
East	717,937	1	11	27	80	1	7	22
York	734,969		11		16	3	1	1
Total - Central East	5,548,871	6	106	136	577	14	20	141
Grey Bruce	127,664		1	5	10			
Elgin-St. Thomas	94,182			30	2			1
Huron	61,097			2	1			1
Chatham-Kent	112,897		1	21	13	1		
Lambton	131,643				1			
Middlesex-London	412,976				21	3	1	7
Oxford	102,561					1		
Perth	75,238		1	6	3			
Windsor-Essex	321,672		5	51	20	3	1	1
Total - Southwest	1,519,930		8	105	71	8	2	10
Brant	126,431			27	11		1	
Haldimand-Norfolk	109,536		1	5	1			
Halton	375,705		1				1	
Hamilton	486,553							
Niagara	423,600		7	34	19		3	3
Waterloo	446,833							
Wellington-Dufferin-Guelph	241,777		2		16	2		1
Total - Central West	2,222,485		11	66	47	2	5	4
December 2002	11,669,344	6	145	559	944	28	34	171
* Total YTD 2002	-	85	4,396	13,914	17,307	695	375	2,942
* Total YTD 2001	-	138	4,913	11,919	16,203	533	325	2,937

The Toronto City regions above are now defined as: North - former North York, South - former City of Toronto, West - former Etobicoke and City of York, East - former Scarborough and East York.

* Adjusted for deletions and late reports.

Summary of Reportable Diseases in Ontario - December, 2002

Health Units by Region	Population 2000	PPNC	Hepatitis A	Hepatitis B	Hepatitis C	HBs	Influenza	Measles	Meningo- coccal
Algoma	125,109				2		6		
North Bay	93,505				2		3		
Northwestern	91,920								
Porcupine	93,680								
Sudbury	199,619				8				
Thunder Bay	158,698				8				
Timiskaming	37,721								
Total Northern	800,242				20		9		
Eastern Ontario	194,945				2				
Hastings & Prince Edward	159,088		1						
Kingston, Frontenac & Lennox	180,225				2		1		1
Leeds, Grenville & Lanark	163,143				2				
Ottawa	779,274	2			25		12	1	1
Renfrew	101,131								
Total Eastern	1,577,806	2	1		31		15		2
Durham	512,271		1				29		
Haliburton-Kawartha	168,120			1	5		2		
Muskoka-Parry Sound	86,218				1				
Peel	1,008,163		1	1	6		32		
Peterborough	128,881								
Simcoe	377,405	1			15		11		
Toronto - total	2,542,844	7		1	83		115		
North	627,021				23		23		
South	688,584	5			31		37		
West	509,302			1	13		21		
East	717,937	2			16		34		
York	724,969	1					26		
Total Central-East	5,546,971	9	2	1	110		215		
Grey Bruce	157,664				5		9		
Elgin-St. Thomas	84,182				2		2		
Huron	61,097						6		
Chatham-Kent	112,897				3				
Lambton	131,643								
Middlesex-London	412,976	1			7		1		
Oxford	102,561						12		
Perth	75,238				1		13		
Windsor-Essex	381,672						1		1
Total Southern	1,509,990	1			16		44		1
Brant	126,481						1		
Haldimand-Norfolk	109,536						2		
Halton	375,705				7		13		
Hamilton	498,553								
Niagara	423,600				16		2		
Waterloo	446,833								
Wellington-Dufferin-Guelph	241,777						18		1
Total Central-West	2,222,435				23		36		1
December 2002	11,669,344	12	3	1	202		317	1	4
Total YTD 2002		194	144	107	4,771	5	2,522	1	57
Total YTD 2001		173	133	129	5,144	5	787	6	106

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* Adjusted for deletions and late reports.

Summary of Reportable Diseases in Ontario - December, 2002

Health Units by Region	Population 2000	Mumps	Pertussis	Rubella	Salmon	Shigella	Syphilis (Pris/Sec)	VDC
Algoma	125,109							
North Bay	93,505		2		1			1
Northwestern	91,920							
Porcupine	93,680		4					
Sudbury	199,619		1					
Thunder Bay	158,698				1			
Timiskaming	37,721							
Total - Northern	900,252		7		2			1
Eastern Ontario	194,945							
Hastings & Prince Edward	159,088				3			1
Kingston, Frontenac & Lennox	180,225		1					
Leeds, Grenville & Lanark	163,143		1					
Ottawa	779,274		6		4	5		
Renfrew	101,131							
Total - Eastern	1,577,806		8		7	5		1
Durham	512,271				9			
Haliburton-Kawartha	168,120				1			
Muskoka-Parry Sound	86,218							
Peel	1,008,163				7	4		
Peterborough	128,881							
Simcoe	377,405				2	1		
Toronto - total	2,542,844		1		27	5	10	3
North	627,021		1		6	2	1	1
South	688,584				8	3	8	1
West	509,302				8		1	
East	717,937				5			1
York	724,969				5			1
Total - Central East	3,546,871		1		51	10	10	4
Grey Bruce	157,664							
Elgin-St. Thomas	84,182		1					
Huron	61,097							
Chatham-Kent	112,897							
Lambton	131,643							
Middlesex-London	412,976				3			
Oxford	102,561		1		1			
Perth	75,238							
Windsor-Essex	381,672				1			
Total - Southwest	1,519,930		2		5			
Brant	126,481							
Haldimand-Norfolk	109,536							1
Halton	375,705				1	1		
Hamilton	498,553							
Niagara	423,600				6	1		
Waterloo	446,833							
Wellington-Dufferin-Guelph	241,777				2		1	
Total - Central West	2,222,485				9	2	1	1
December 2002	11,669,344		18		74	17	11	5
Total YTD 2002		12	471	2	2,322	839	164	364
Total YTD 2001		17	455	16	2,498	241	26	332

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* Adjusted for deletions and late reports

Summary of Reportable Diseases in Ontario - December, 2002

Health Units by Region	Population 2000	PPNG	Hepatitis A	Hepatitis B	Hepatitis C	Hib	Influenza	Measles	Meningo- coccal
Algoma	125,109				2		6		
North Bay	93,505				2		3		
Northwestern	91,920								
Porcupine	93,680								
Sudbury	199,619				8				
Thunder Bay	158,690				8				
Timiskaming	37,721								
Total - Northern	800,252				20		9		
Eastern Ontario	194,945				2				
Hastings & Prince Edward	159,000		1						
Kingston, Frontenac & Lennox	100,225				2		1		1
Leeds, Grenville & Lanark	163,143				2				
Ottawa	779,274	2			25		12	1	1
Renfrew	101,131								
Total - Eastern	1,577,806	2	1		31		13	1	2
Durham	512,271		1				29		
Haldimand-Norfolk	168,120			1	5		2		
Muskoka-Parry Sound	86,213				1				
Peel	1,000,163		1	1	6		32		
Peterborough	128,881								
Simcoe	377,405	1			15		11		
Toronto - total	2,542,344	7		1	23		115		
North	627,021				23		23		
South	648,534	5			31		37		
West	509,502			1	12		29		
East	717,937	2			16		34		
York	734,969	1					26		
Total - Central East	5,548,871	9	2	3	110		215		
Grey Bruce	157,664				5		9		
Elgin-St. Thomas	94,182				2		2		
Huron	61,097						6		
Chatham-Kent	112,897				3				
Lambton	131,043								
Middlesex-London	412,976	1			7		1		
Oxford	102,561						12		
Perth	75,230				1		13		
Windsor-Essex	381,672						1		1
Total - Southwest	1,519,930	1			18		44		1
Brant	126,481						1		
Haldimand-Norfolk	109,536						2		
Halton	375,705				7		13		
Hamilton	490,553								
Niagara	423,600				16		2		
Waterloo	446,333								
Wellington-Dufferin-Guelph	241,777						13		1
Total - Central West	2,222,485				23		36		1
December 2002	11,669,344	12	3	3	202		317	1	4
* Total YTD 2002	-	194	144	107	4,771	5	2,522	1	57
* Total YTD 2001	-	170	173	129	5,484	7	787	6	106

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Summary of Reportable Diseases in Ontario - December, 2002

Health Units by Region	Population 2000	Mumps	Pertussis	Rubella	Salmon.	Shigellosis	Syphilis (Prim/Sec)	VTEC
Algoma	125,109							
North Bay	93,505		2		1			1
Northwestern	91,920							
Porcupine	93,630		4					
Sudbury	199,619		1					
Thunder Bay	150,690				1			
Timiskaming	37,721							
Total - Northern	800,252		7		2			1
Eastern Ontario	194,945							
Hastings & Prince Edward	159,032				3			1
Kingston, Frontenac & Lennox	130,225		1					
Leeds, Grenville & Lanark	163,143		1					
Ottawa	779,274		6		4	5		
Renfrew	101,131							
Total - Eastern	1,577,806		8		7	5		1
Durham	512,271				9			
Haldimont-Kawartha	165,120				1			
Muskoka Parry Sound	36,210							
Peel	1,000,163				7	4		
Peterborough	120,031							
Simcoe	377,405				2	1		
Toronto - total	2,542,044		1		27	5	10	3
North	627,021		1		6	2	1	1
South	688,584				8	3	8	1
West	569,302				8		1	
East	717,937				5			1
York	724,969				5			1
Total - Central East	5,548,871		1		51	10	10	4
Grey Bruce	157,664							
Elgin-St. Thomas	34,132		1					
Huron	61,097							
Chatham-Kent	112,897							
London	131,643							
Middlesex-London	412,976				3			
Oxford	102,561		1		1			
Perth	75,238							
Windsor-Essex	331,672				1			
Total - Southwest	1,519,930		2		5			
Brant	126,431							
Haldimand-Norfolk	109,536							1
Halton	375,705				1	1		
Hamilton	498,553							
Niagara	423,600				6	1		
Waterloo	446,833							
Wellington-Dufferin-Guelph	341,777				2		1	
Total - Central West	2,222,485				9	2	1	1
December 2002	11,669,344		18		74	17	11	7
* Total YTD 2002	-	12	471	2	2,322	839	164	364
* Total YTD 2001	-	17	455	16	2,488	231	26	352

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